



The impact of leader's feedback on team adaptation: the role of psychological safety

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Abstract

Title – The impact of leader's feedback on team adaptation: the role of psychological safety

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The aspiration of this master dissertation is to understand the relationship between the feedback provided by the leader and the adaptability of the team, and how psychological safety relates to both. Data was collected by means of a survey in three different types of teams: sports, company's and military. From previous research, we believed that providing feedback would positively influence the adaptability of the team, and that psychological safety would explain this process. The results confirmed that feedback provided by the leader has a direct relationship with team adaptability. However, psychological safety's role as a mediator was not confirmed in all three groups.

Key words: Team effectiveness, Adaptability, Leader Feedback, Psychological Safety

Resumo

Título – O impacto do Feedback dado pelo líder na adaptabilidade da equipa: o papel da Segurança Psicológica

Autor – Laura Bento

O objetivo desta dissertação de mestrado é perceber a relação entre o feedback dado pelo líder e a adaptabilidade da equipa, e como é que a segurança psicológica relaciona os dois. Os dados para o estudo foram recolhidos, através de questionários, em três diferentes tipos de equipas: desporto, empresas e militares. Segundo pesquisas prévias, era expectável que o feedback dado pelo líder aumentasse a adaptabilidade da equipa e que a segurança psicológica explicaria esta relação. Os resultados confirmaram que o feedback dado pelo líder tem uma relação direta com a adaptabilidade da equipa. Contudo, a relação da segurança psicológica como mediador não se confirmou em todos os segmentos.

Palavras-chave: Equipas eficazes, Adaptabilidade, Feedback do líder, Segurança Psicológica

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Preface

I would like to express the deepest appreciation to my thesis coordination Professora Dra. Patrícia Costa who always supported me. Also, I want to recognize my joint work colleagues that helped collection and shared their insights. Additionally, I want to thank my love ones who supported and believed in me throw this journey.

Finally, I want to express my profound gratitude to my amazing mom. Without her continuous encouragement throughout my years of study this accomplishment would not have been possible.

Introduction

My first thought when I embraced my dissertation was to question myself with it. Teams have always been part of my life, not only in academic and sports progress but also in my daily routines. Although the innumerable and different studies about this theme there are still some research areas that are, yet, not clear. Kozlowski & Bell, (2003) argue that with the rising of universal competition and innovation pressures are making more teams appear as the core organizations. These leads to different skills like expertise and experience. Thus, organizations need to respond with extra flexibility, quickly and adaptively.

So, I decided to give a slight contribute for this complex subject that, I believe, leads to the progress of humanity. As Henry Ford once said: “Coming together is a beginning. Keeping together is progress. Working together is success”.

Therefore, the aim of this research is to understand what may contribute to team adaptability and we look both at emergent states and team processes (psychological safety and providing feedback, respectively). As a triathlon coach and entrepreneur, myself, these were the core values that intrigued me the most. Consequently, the goal of my work is to clarify how providing feedback by the leader affects the adaptability of teams and the role of psychological safety in this relationship. As this research progressed, we were able to collect data in different samples of teams, which amplified my research question in a more attractive way, allowing to evaluate if the same relationships exist in distinct contexts. These samples are military, sports and companies, which work in very different way and have different professional cultures.

This dissertation follows the following structure: Firstly, in the literature review, I focus on the mainly concepts of team effectiveness, team adaptability, team processes and emergent states. It seems to me that defining these constructs and exploring the possible relationships between them was crucial to understanding my point of view. Also, I develop my three hypotheses. Secondly, I describe the methodology and how I undertook my data collection. The next step is data analysis and discussion of the outcomes as well as reflecting on practical implications. Finally, I highlight the limitations of the study and further research is recommended.

Literature Review

Team effectiveness

Let us start with the definition of team effectiveness. This concept integrates several criteria such as: the successful role of the individual member contributions and the leader coordination actions that empower the team work (Zaccaro, 2001), as well as team longevity and satisfaction to the team members (Hackman & Morris, 1975). Nowadays, assembling work about teams has develop into the organizational life (Morgeson, DeRue, & Karam, 2010). As teams has become the core of organizations success (Martin & Bal, 2006) learning to be team-oriented is fundamental. Firstly, let's question ourselves about what is a team? A team is composed with a group of individuals with different roles cooperating adaptively, interdependently, and dynamically against a common and challenging objective. (Salas, 2005). Coordination of duties, integrating perspectives, sharing knowledge and insights are nowadays accomplished in teams in almost all the organizations.

For example, a football team must progress in the field in order to score. Teams are like a human body with an anatomical system through which this collaboration recurrently occurs (Edmondson, 2003). However, being a team player is not easy because consequently we work interdependently. Although, rivalry and collision of interests can be negative to a team's triumph, also can lead to a better team with more original plan and ultimately more productive team, (Amason, Thompson, Hochwarter, & Harrison, 1995).

Salas (2005) claims that what ensures team success is teamwork, "as a set of interrelated thoughts, actions, and feelings of each team member that are needed to function as a team, and that combine to facilitate coordinated, adaptive performance and task objectives resulting in value-added outcomes" (page 562). In other words, Morgeson et al. (2010) say that teamwork is defined by repeated periods of reciprocally interdependent interaction. Therefore, team processes report interdependent group exercises that orchestrate task work in team members pursuit of better performance (Marks et al. 2001), such as deciding the strategy or coordinating team actions. Accordingly, taskworks are actions that each member should perform to carry out the team's task. (McIntyre & Salas, 1995), such as, for example, passing the ball to another teammate, to suture a patient's wound, etc.. However, simply accomplishing the taskworks, "as team's interactions with tasks, tools machines and systems" (Bowers, Braun & Morgan, 1997: 90), is not enough to become effective. The way in that individual members reach out among themselves (e.g. team processes) is central to team effectiveness.

Salas et al., (2005), believes that, regardless the task, effective teams depend of five concepts, “The Big Five”. Those are Team Leadership, Mutual Performance Monitoring, Backup Behaviors, Adaptability and Team Orientation. They delineate team leadership as the capacity to command and orchestrate the performance of the team. It’s also the ability to estimate group achievements, to depute functions, to increase knowledge, skills, and abilities, to inspire the members, to create a strategy and coordinated in order to build a positive atmosphere. Secondly, they argue that mutual performance monitoring is the competency to improve a universal understanding of the team atmosphere and to execute the right task strategies to meticulously monitor teammates’ achievements. The skill to foreseen the needs of the others through proper wisdom about responsibilities and the ability to change workload among members to manage balance in cycles of pressure with a lot of hard work are known as backup behaviors. In addition, team orientation during team’s synergies is explained as the disposition to take other’s attitudes into account and the conviction of the priority of team goals over individual members’ goals. Finally, adaptability illustrates the capacity to regulate strategies based on feedback gathered from the ecosystem. Further in this thesis we will develop this concept in more detail.

In 1964, McGrath, formulated an Input-Processes-Outcome (IPO) model for studying team effectiveness. In this model, inputs are the primary antecedents of processes that, in turn, mediate the effect of inputs on outcomes. They consider Inputs like as previous elements that enable and hold down team members’ interactions. Continuing with football, one example of an input, is the perception of one player about the ball in the field. Outputs are results of team actions that are respected by at least one team members, such as scoring a goal. Although the IPO model has been the theoretical framework used in countless empirical studies of team effectiveness, several researchers have also insisted on the idea that time is a critical role in teams evolution and development.

So, Marks, Mathieu and Zaccarro (2001) advanced with a framework based on the insight that organizations act in temporal cycles of goal-directed actions, such as “episodes”. They argue that over time, team performance is seen a serie of related IPO episodes (i.e. goals and goal accomplishment periods), rather than one single IPO representing the integrated course of the team. Therefore, the aftereffect from an earlier episode will become an input for the coming cycle. For example, if a football team loses an important player during a game is an output, they will serve as an input and it will redefine their strategy for another cycle. They defend that IPO models are attached to episodes and subepisodes; this means that teams are committed to different task works at different phases of task performance, described below.

Lester and colleagues (2002) describe performance as achieving essential commitments, meeting objectives, and recognizing key survival elements. Similarly, Hiller, Day, & Vance, (2006) composed a tool to compared team effectiveness with the following parameters: planning, problem solving, support and consideration, mentoring and development, and overall effectiveness. On the other hand, team effectiveness has a more integrated point of view with considering not only the group performance, for example completing a team task, and yet the interactions among the them such as team processes and teamwork to carry out the team outcome (Salas, 2005).

Consequently, over the past decade, “Effectiveness” has become more complex to account for new criteria such as creativity and customer service. (Mathieu, Maynard, Rapp, & Gilson, 2008). There is no singular measure of team effectiveness, although Marks et al., (2001), as defined an effective team as the sum of team members’ skills and the environment surrounding but also as the processes team members use to interact in order to conclude successfully the task. As a result, researchers have investigated the mediators that explain why and how certain inputs affect team effectiveness. The mediators are divided in to two classes: team processes and emergent states. Further, we will narrow the concept of team effectiveness and explain exhaustively the two mediators above.

Team Adaptation

Nowadays, we live in a world in continuous innovation and things do not always go as planned. So, we need to be able to observe diversion from expected, and readjust appropriately. This capability is adaptability and allows the group to conserve coordinated interdependence and achievements through choosing its own a proper web or creating a new one. Hence, adaptability refers to a shift in the team to deal with unforeseen tasks (Kozlowski, Gully, Nason, & Smith 1999).

According to West (2000), activities or adaptation assign to goal-directed behaviors that can help to assimilate the alterations in team goals, strategy's and mechanisms that they have diagnosed as long the meditation phase takes place. Therefore, adaptation is viewed as a critical fact of greater learning cycles and as a form of testing hypotheses through practical experience. Team ability is important especially in different environments where the team requires a new strategy to develop successfully. Accordingly, the importance of this element of the "Big Five" by Salas et al. (2005) is not only the capability to modify the team performances, yet the competence of these adjustments to fight the detected deviation.

Many researchers have defined team adaptation as a complex phenomenon involving variable inputs, interaction processes, and emergent states that turns on the adaptabilities in the team proprieties and processes, allowing superior performances of effectiveness in complex ecosystem.

In particularly, Fleming et al., (2003) describes team adaptation has the functional change in response to altered environmental contingencies and higher order process that emerges from an integrated set of individual attributes. The ability of a group to carry out a necessary readjustment in return to an unexpected interruption or trigger is defined by Maynard, (2015) as team adaptability. A trigger can be, for example, the addition of a new player to the team that will create a need for a change in the distribution of roles and responsibilities in order to move forward. Despite the fact, teams have different capacity of adaptation, they are created with equal capacity of adaptation, there are some factors that may influence the team adaptation, such as team experience and collective efficacy, that are two examples of antecedent factors. Also, she sees the team adaptation process as relevant adjustments in return to answer an interruption or trigger that will stimulate the urgency of adaptation. The mediators, such as communication or information sharing, are considered an important way to an effective adaptation. So, for Maynard, the group cognition or the team feelings and reactions such as the

willingness to work as a team are different emergent states are included in the team processes of adaptation, which in turn lead to team adaptive performances.

In 2006, Burke et al., developed a multidisciplinary, multilevel and multiphasic model of adaptive team performance. This model incorporates cognitive sciences perspectives and organizational behavioral. The subsequence of cognitive and behavioral actions of the team's elements are defined as adaptive team performance by Burke (2006). In other words, it is a multilevel phenomenon that arise as team members and teams recursively display behavioral processes and draw on and update emergent cognitive states to engage in change (Burke, Stagl, Salas, Pierce, & Kendall, 2006). So, to strike this adaptive team performance point, the team should engage in a cycle that consists of four process-oriented phases.

The first one is the situation assessment that consist by a team member or more checking the ecosystem in order to find some clues that may disturb the performance of the team achievement of the team goals. After the feedback, the team members are able to apply to build a plan reformulation, which is the second phase.

There are two inputs to this process, team situation awareness and psychological safety. The first one is assign to a specific moment in time when the team has come along to a shared understanding, an awareness of the present stage. (Salas, Prince, Baker, & Sherstha, 1995). Therefore, during this phase, the team players must give fitting consideration in order to maintain the shared understanding and consequently observe which other's players are germane to the team's goals. The second input was already described above, in this literature review, and it is crucial because it originates the member's capacity to talk among each other about triggers and consequently propose solutions plan development.

The third step is the execution of the plan. After the plan took place the player's must rebound the knowledge coming from the past events.

To accomplish adaptive team performance and therefore team adaptation is not enough that only part of the team is working to achieve the outcome. It is necessary the commitment of individual and team-level behaviors like monitoring, backup communication, leadership, and coordination. Team learning is the last phase of the adaptive team performance cycle and it makes easier the evolution of know-how and improves their capacity of team knowledge in a current situation. In sum the model approach develop a thought of team adaptation, as effective starting point as a result of its dynamic and multi-level nature.

Team Processes

The process taxonomy developed by Marks, Mathieu and Zaccaro (2001), is a deeply discriminated approach to team processes. The taxonomy represents an “integration of prior research streams and helps to target what, when, and why particular team behavioral processes are likely to be most relevant,” (Kozlowski & Bell, 2003, page 49). The knowledge of processes that members operate in groups will empower companies to adjust human resource practices, and leaders in selecting, training, developing, and awarding personnel for effective teamwork. So team processes are draw by Marks and her colleagues as “members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals”. Theoretically, processes capture how team elements puzzled “their individual resources, coordinating knowledge, skill, and effort to resolve task demands” (Marks et al, 2001, page 2) As said above, these scholars perceive task episodes as evolving with time, as progressions of transition phases, that is planning of the task and action phases, in other words the actual performing the task. They cycle across a series of open-ended stages. Additionally, during these cycles of transition an action phases, interpersonal processes (e.g. motivation building, affect management and conflict management) must be performed. At the same time as performance episodes takes place different actions are happening therefore the kind of team processes will be different. With this temporal framework, relevant processes are described in different phases.

“Action phases are the periods of time when teams are engaged in acts that contribute directly to goal accomplishment, such as taskwork”, (Marks et al., 2001). These phase may differ considerably by group short. For example, football teams perform in competitions. As teams develop against better outcomes and performances it is possible to distinguish four different types of actions processes. In sum, the four type of activities are the monitoring of progress toward goals, systems monitoring, team monitoring and backup behavior and coordination.

On the other hand, transition phases are spaces of time where the principal spotlight of the team members are the evaluation and planning actions to create the path to achieve the desired team performance or goal. For example, staff meetings, retreats, after-actions reviews, (Marks, 2001). The team actions in the middle of performance episodes portray the transition phase. For further developments teams must mirror and understand earlier achievements including plan the next actions (Lepine, Piccolo, Jackson, Mathieu, & Saul, 2008). As a result, Marks and colleagues characterized this phase by three types of transition processes: mission

analysis, goal specification as well as strategy formulation and planning. According to Morgeson et al (2010), the leadership functions in this phase are “composing the team, defining the mission, establish expectations and goals, structure and plan, training and developing de team, sensemaking and providing feedback., (page 12)”

Finally, interpersonal processes are explained by Marks et al., (2001) as the processes that members adopt to handle interpersonal relationships. Therefore, interpersonal processes are the base for the effectiveness of others process, because they are present in the pair of transition / action phases. Another study, argue that interpersonal processes e had an affirmative link with performance (Mathieu & Schulze, 2006). As time goes by the processes affects team cohesion and that is an elementary former of team satisfaction and longevity.

Feedback provided by the leader

Since teams want to became effective they must periodically review their performance against established milestones. London, (2006) defined feedback as the “transmission of evaluative or corrective information about some sort of action, event, or process”, (page 304). Disturbing team members to watch the differences among goals and real performances scratching their mind to errors. Calling their attention to significant regulatory process such as reflection, adaptation and self-correction are some of the more important effects of feedback, (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004).

Complementing the work of Marks, (2001), Morgeson et al (2010), combined the leadership functions of the action phase. These functions are for instance, monitoring the team, managing team boundaries, challenging the team, performing team tasks, solving problems, providing resources, encouraging self-management and finally supporting social climate.

As said above, providing feedback is one leadership function that occurs in the transition phase. From this perspective, providing feedback is a crucial input into the regulatory mechanisms. Morgeson, DeRue, & Karam, (2010) assert that “all sources of leadership can perform this team leadership function, admitting that each leader will differ in terms of the kind of feedback they are ideally positioned to provide”, (page 14).

They argue that informal internal leadership are able to provide and accept open-ended task-related feedback. Also, he says that the external information gives the feedback that helps the team to adjust and set point to the new conditions environmental. Further, formal leadership are able to advice team’s members reflect evolutions across settled goals.

Furthermore, in taking note of the leader’s feedback the elements of the team might discuss with each other, and, in the process, they may affect the other’s team perceptions such

as their identity, their ambition help achieve the established objectives, and their feeling of psychological safety that is being able to express their opinions about the leader, individual members and about the group (London, 2006). So, the different element feelings about feedback can inspire others and provide interactions between them. Explicit communication about expectations and goals at the beginning and team feedback about actions and outcomes over task helps upgrades the development of shared mental models. In the same point view, shared mental models are assumptions and perception about behaviors, abilities, knowledge, and a mutual interpretation of shared events. Consequently, they improve coordination and task accomplishment (London, 2006).

Therefore, the feedback provided by the leader will help handle the team needs that in return empowers team performance and adaptability.

So, these relationships bring us to my first research question:

H1: The feedback provided by the leader positively affects team adaptability.

H1a: The feedback provided by the leader positively affects team adaptability in a sports environment.

H1b: The feedback provided by the leader positively affects team adaptability in a company's environment.

H1c: The feedback provided by the leader positively affects team adaptability in a military environment.

There are countless studies about providing feedback, and several different types of feedback. Geister, Konradt, & Hertel, (2006) divided them as outcome and process feedback. Outcome feedback is the information concerning performance outcomes, and process feedback is the information concerning how one performed a job. Therefore, usually when the feedback incorporates information about tasks is giving individually. Although, team feedback may be team-work related or about motivation that is the interpersonal behaviors of the team.

Indeed, the goals must be defined for the group and not for the each one of the members, so when they work together they have better results than when they performed independently,(DeShon et al., 2004). Thus, distinct forms of feedback should be achieved at different phases to underwrite that the team is able to use it accordingly. For example, the outcome process is more important in a transition phase as motivator: “in the last game you defend very well”. On the other hand, process feedback is frequently used in the action phase as clarifying the performance “next time you must immediately pass the ball”.

Feedback also could be positive or negative. When a team works together on a task it “is positive when team members approve, appreciate, or compliment other’s contributions”. In contrast, the feedback “is negative when they disapprove, criticize, or dislike them”, (page 722, Kahai, Huang, & Jestice, 2012).

Furthermore, receiving feedback has psychological implications. Mainly due to the fact that return information from the leader makes easier the tasks and interpersonal processes that will permit the group have a more effectively system. Therefore, to improve the engagement of the team, the leaders should enhance the connection among them through providing feedback (Morgeson et al., 2010). Beyond that, feedback on the cognitive processes of the other team members may resolve conflicts better than feedback merely regarding preferred decision outcomes (Hinsz et al., 1997). LePine, in 2013, made a study about the unexpected switch that implicates simulating the decision-making in computerized teams. The teams with more openness to experience and a lower level of dependence where the ones that where more adaptable. Therefore, these teams might improve adaption because they could reflect better and consequently benefit more from a feedback in an unexpected situation. So, to achieve a high level of expertise that promotes adaptation, team members must set aside and consider individually and collectively the information provided by the leader.

Emergent States

Marks et al. (2001) argue that the inputs of team effectiveness were the team processes, referred above, and the emergent states. Therefore, in this context of an episodic model of team effectiveness, team processes involved member's actions whereas others mediating mechanisms, such as emergent states, "are better conceived of as cognitive, motivational, or affective shared states"(J. Mathieu et al., 2008). These latter mediators could be for example team potency, psychological safety and collective affect. Marks et al. (2001) describe emergent states "as properties of the team that are dynamic in nature and vary as a function of: team context, inputs, processes and outcomes" (p. 357). Furthermore, emergent states can directly influence the group outcomes and they are the positive attitudes, values, motivations, and cognitions. They are distinct from team processes due to the fact that they do not reflect members' interaction. They describe properties of the team that may change because of others emergent states or team processes.

Consequently, emergent states are the outcomes of team's backgrounds, including team processes and actions undertaken by the team. In sum, Marks et al. (2001) focus that emergent states are not equal to processes because they do not characterize the type of the group synergies. Nevertheless, they are team characteristics that may switch because of the repercussion of another emergent states or team processes.

Psychological Safety

Despite the fact that nowadays many enterprises work in teams, involving the sharing of ideas, integrating perspectives, and coordinating tasks, functioning interdependently in a team is not ever simply clear. Edmondson, (2003) asks "what allows people to openly share ideas and contribute a part of themselves to a collaborative undertaking?" (page 2) Well, she describes it as psychological safety, "the individual perceptions about the consequences of interpersonal risk taking in their work environment". So, an employee that believes that he/she is free to make mistakes, to put his/her ideas in practice and shares his/her creativity in order to perform better in the workplace has higher psychological safety. In other words, it is a shared belief of confidence that when someone speaks the other member's will accepted and there will not be embarrassment or punishment. That is a safe ground where mutual respect and trust exist among the team.

Furthermore, psychological safety can be described as the common understanding, held by the team, that they are safe for interpersonal risk taking. Frequently, this assumption has

tendency to be tactic and assume as a universal truth. Also, there are not a straight forward consideration to this belief either by individuals or by the team members as one, (A. Edmondson, 1999). With the concern of more ambiguity, distrust, innovation and more job rotation, in the next years the organizations will have to ask more questions, request extra help, and accept more. Therefore, organizations that work in teams need to be able to guarantee that all the members have a meaningful source of psychological safety. Edmondson , (2003) defined 5 factors that may increase psychological safety.

Firstly, let us start with the leader's behavior. The leader must be available and approachable, also the leader must be explicitly inviting input and feedback. If the group member's opinion is respected feedback will improve active participation. On the other side of the coin when the leaders do not encourage an input or an argument the team will feel afraid to tell their thoughts because they fear negative consequences. Another critical function of the leader is to control broad-mindedness and misjudgment. Also, the leader must keep in their mind that the team elements will follow his behavior and mimic him. For example if the leader will not deliberate some issues or even not discuss some problems the members will reflect is behaviors doing the exact same thing.

The leader behavior is more influential when to obtain an atmosphere of Psychological Safety the leader might leave his comfort zone, such as being more open and give better coach orientation. This lead us to the second research question:

H2: The feedback provided by the leader positively influences Psychological Safety:

H2a: The feedback provided by the leader positively influences Psychological Safety in a sports environment.

H2b: The feedback provided by the leader positively influences Psychological Safety in a company's environment.

H2c: The feedback provided by the leader positively influences Psychological Safety in a military environment.

The second factor that may increase psychological safety is trusting and respectful interpersonal relationships. For example, the team members expect to be accepted and to have the benefit of the doubt.

The third factor that may increase the psychological safety is the practice in fields. On the contrary of sports teams the companies' teams do not have the privilege to learn in practice fields or in rehearsal settings. So Senge (1990) remarks that management teams enroll in the

reality where the risks are tremendous. “Therefore, managers who set up a kind of practice field environment, can deliberately try to cultivate psychological safety in that environment such that participants understand that harmful consequences of mistakes and failures are removed or suspended”(A. C. Edmondson & T, 2003).

To improve psychological safety the organizational environment situation might be helpful, although not fundamental. Another, factor that promotes psychological safety is the magnitude of the team background in the support of the context. As a result of the access to sources and to knowledge that will decrease insecurity and defensiveness in a team provoked by burdens of different sharing of sources among the team members and within the team’s organizations.

Finally, the fifth factor is the emergent group dynamics. The interactions between members are likely to affect the team security. In consequence, there are distinct levels of psychological safety that may emerge as a reflect of the group interactions.

In the future teams will need to have the ability to work as one, interdependently. So, the evolution of group cohesion, efficacy and consensus are improved by interactions between them. To decrease uncertainty and promote motivation, self-satisfaction and achievements the team needs feedback to cue them about where and how they should appropriate their efforts.

Also, to be easier for teams to reach a mutual understanding and common agreement they need a powerful feedback from leader.(Kahai et al., 2012). Above all, teams are effective in part as a result of different members having distinctive assets, such as unequal states and sorts of expertise and wisdom, that might benefit the team in finding solutions to the unexpected issues. In an atmosphere of total psychological safety members are allowed to play the devil’s advocate, where they can sense the freedom of asking, inquiring, suggesting and propose decisions that may or not increase the quality of the plan.

Furthermore, we could think that individual member’s characteristics or emotional behaviors would described psychological safety. Although, this is not true because psychological safety is defined by a certain identity of the team. Also, this expectation that the other’s elements will not judge needs time. So we had to consider that the team’s history is important to shape psychological safety. Also, team psychological safety is an input of learning behavior because this environment has a huge potential of embarrassment or treat. By the way this has a massive influence on the teams outcomes, because it mitigate the needless worry about how the others members will backfiring to them (A. Edmondson, 1999).

To conclude, in order to achieve the task successfully team members need to cooperate among them. So, it is necessary something more than just the expertise and available resources.

Therefore, what a successful team's needs is a good use of the team processes. As it was said before, providing feedback is essential to improve adaptability and we suggest that psychological safety mediates this relationship. This lead us to the final hypotheses:

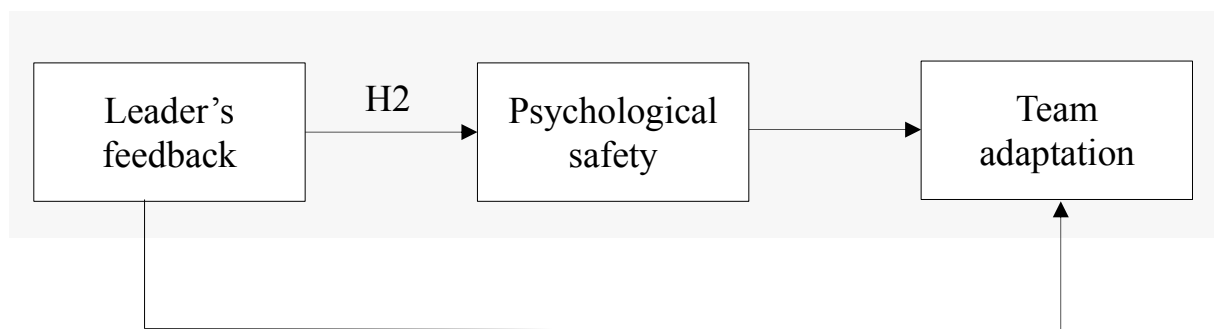
H3: The feedback provided by the leader positively affects team adaptability and psychological safety mediates the relationship between the feedback provided by the leader and team adaptability.

H3a: The feedback provided by the leader positively affects team adaptability and psychological safety mediates the relationship between the feedback provided by the leader and team adaptability in a sports environment.

H3b: The feedback provided by the leader positively affects team adaptability and psychological safety mediates the relationship between the feedback provided by the leader and team adaptability in a company's environment.

H3c: The feedback provided by the leader positively affects team adaptability and psychological safety mediates the relationship between the feedback provided by the leader and team adaptability in a military environment.

H3



H1

Figure 1: Schematic representation of the hypotheses

Methodology

Participants and procedure

Team effectiveness was proposed as the broad theme to the dissertation of three students at Católica Lisbon School of Business and Economics. We embraced this project and together we collected the data in thirty-two real teams, as a team.

Firstly, we built one questionnaire covering the variables for our three different studies. Each one of us choose to address the questionnaires to a different group of respondents. The same questionnaire was applied in military, companies, and sports teams. The items and scales, included in the questionnaire, for each one of the variables in the present study were the feedback provided by the leader, team adaptation and psychological safety, presented in appendix 1.

Overall, the data amounts to 147 individuals ($n = 147$), with the following distribution: 13 military teams with 52 members, 10 companies' teams with 32 members and 9 sports teams with 63 members. As a global sample the respondents were mainly male, with 105 participants and female with only 42 participants with a standard desviation of 0,45. If we consider the different segments, in military we have 100% males, in companies we have 13 females and 19 males, and in sports we have 23 females and 40 males. Considering that the participants have a huge difference in age with a standard desviation of 12,65 and consequently a diversity in academic background, the sports teams were the youngest with an average age of 21 ($SD = 11,52$), followed by the companies with an average age of 32 ($SD = 10,76$), and with military being the oldest ones with an average of 37($SD = 8,98$).

Measures

As previously stated, the variables used in this study were the leader feedback, team adaptation and psychological safety.

All the variables above were assessed using a scale Likert scale, ranging from 1 to 7, which can be summarized like this: 1- strongly disagree; 7 – strongly agree. The leader feedback scale used in this study was based on Hoogh & Deu (2008) and includes 5 items such as “the leader of the team communicates the operational and performance results” or “the leader of the team gives corrective feedback”.

As for team adaptation, it was assessed by 10 items and it was based on the work of Marques Quinteiro et al., (2015), with items like “My team is effective in developing a plan of

action, in a short time, to deal with unforeseen” or “My team is effective in staying calm when dealing positively with stressful events”.

Lastly, on the variable of psychological safety we used 7 items, for instance some of them were, “In my team, it is safe to take risks and take chances on new ideas” and “When working with members of my team, my competences and talents are valued and used”, based on the scale developed by Edmondson (1999) to assess psychological safety.

The analysis of the gathered data was done using the SPSS Statistics Software and the Cronbach’s alpha was calculated in order to test the reliability of each scale used. These results as well as the number of items used are presented in Table 1 below.

Variable	Number of items	Cronbach’s alpha
Leader Feedback	5	0,83
Team Adaptability	10	0,95
Psychological Safety	7	0,73

Table 1: Cronbach’s alpha calculated for each variable.

In order to test the first hypothesis: – H1: The feedback provided by the leader positively affects team adaptability – we conducted a simple regression for the three different samples of teams (military, sports and companies). In this test, the dependent variable was Team Adaptability and the independent variable was the Leader Feedback. Hypothesis 2 –The feedback provided by the leader positively influences Psychological Safety - was also tested for the three different samples of teams, with a simple regression where the dependent variable was Psychological Safety and the independent variable was the Leader Feedback. Lastly, Hypothesis 3 - The feedback provided by the leader positively affects team adaptability and psychological safety mediates the relationship between the feedback provided by the leader and team adaptability – was also tested the three deferent segments using a mediation analysis.

Data Analysis

Results

The descriptive statistics and the correlations for all the variables in the study are presented in the Table 2 below. All three variables were significantly correlated with each other.

	Mean	SD	1.	2.
1. Leader Feedback	5,86	0,85		
2. Team Adaptability	5,18	1,07	0,38*	
3. Psychological Safety	5,0	1,05	0,29*	0,57*

Table 2: Descriptive statistics and correlations for all the variables in the study (Notes: N= 147 individuals; *p<0,01).

As previously mentioned, Hypothesis 1 was tested using simple regressions between the independent variable the leader feedback and the dependent variable team adaptability for the sample as whole and the three different samples sports, company's and military. The results of this simple regression are presented in table 3:

	Hypothesis	Independent Variable	Dependent Variable	R ²	F	p	β
	1	Leader Feedback	Team Adaptability	0,15	24,61	0,00	0,38*
Sports	1a			0,11	7,19	0,01	0,33**
Company's	1b			0,21	7,44	0,01	0,46***
Military	1c			0,34	25,20	0,00	5,79*

Table 3: Output of the regression analysis made to test the first hypothesis (*p<0,00; **p≤0,01).

Overall, the effects of the variable feedback provided by the leader on adaptability were statistically significant. The feedback provided by the leader has a positive effect ($\beta = 0,38$) on adaptability. The variable feedback provided by the leader explains 14,8% of adaptability variance ($R^2=0,148$ $F=24,610$, $p<0,00$). In the sample of sports the feedback provided by the leader has a positive effect ($\beta = 0,33$) on adaptability. The variable feedback provided by the leader explains 10,7% of adaptability variance ($R^2=0,107$ $F=7,188$, $p<0,009$). As for the sample

of company's the feedback provided by the leader has a positive effect ($\beta = 0,46$) on adaptability. The variable feedback provided by the leader explains 21% of adaptability variance ($R^2=0,210$ $F=7,437$, $p<0,011$). Then, in the military sample the feedback provided by the leader has a positive effect ($\beta = 0,58$) on adaptability. The variable feedback provided by the leader explains 33,5% of adaptability variance ($R^2=0,335$ $F=25,195$, $p<0,00$). Therefore, all Hypothesis 1 are supported.

The second Hypothesis was also tested using simple regressions between the independent variable the leader feedback and the dependent variable psychological safety for the sample as whole and the three different samples sports, company's and military. The results of this simple regression are presented in table 4:

	Hypothesis	Independent Variable	Dependent Variable	R ²	F	p	β
	2	Leader Feedback	Psychological Safety	0,09	13,55	0,00	2,93*
Sports	2a			0,15	10,19	0,00	0,38*
Company's	2b			0,26	10,47	0,00	0,51*
Military	2c			0,03	1,33	0,25	-0,16**

Table 4: Output of the regression analysis made to test the first and second hypothesis (* $p<0,00$, ** $p<0,25$).

For hypothesis two the overall effects of the variable feedback provided by the leader on Psychological Safety were also statistically significant. The feedback provided by the leader has a positive effect ($\beta =0,29$) on psychological safety. The variable feedback provided by the leader explains 8,6% of variance ($R^2=0,086$ $F=13,554$, $p<0,00$) in psychological safety. In the sample of sports, the feedback provided by the leader has a positive effect ($\beta =0,38$) on psychological safety. The variable feedback provided by the leader explains 14,5% of variance ($R^2=0,145$ $F=10,19$, $p<0,02$) in psychological safety. As for the sample of company's the feedback provided by the leader has a positive effect ($\beta =0,51$) on psychological safety. The variable feedback provided by the leader explains 25,9% of variance ($R^2=0,259$ $F=10,465$, $p<0,03$) in psychological safety. Although in the military sample, the feedback provided by the leader has a negative effect ($\beta =0,46$) on psychological safety. The variable feedback provided by the leader explains 21% of variance ($R^2=0,210$ $F=7,437$, $p<0,011$) in psychological safety. However, Hypothesis 2c is not supported the Hypothesis 2, 2a and 2b are supported.

To finish the analyses, as stated before, a simple mediation was computed to understand whether psychological safety could mediate the relationship between leader feedback and team adaptability. For the three sub samples the unstandardized effects were computed for each of 5000 bootstrapped samples. The results are presented in the following table:

	Indirect effect	95% Confidence Interval		Hypothesis
		Lower CI	Upper CI	
Sports	0,4076	0,1710	0,7416	Supported
Companies	0,1851	0,0111	0,05792	Supported
Military	-0,466	-0,1590	0,0051	Rejected

Table 5: Output of the mediation analysis made to test the third hypothesis

So, in the segment of sports we tested the significance of this indirect effect using bootstrapping procedures. The indirect effect was 0,4076 and with a 95% confidence interval ranged from 0,1710, to 0,7416. Therefore, the indirect effect was statically significant. For the companies segment the indirect effect was 0,1851, and with a 95% confidence interval ranged from 0,0111, to 0,5792. Therefore, the indirect effect was statically significant. Finally, in the military segment the indirect effect was $-0,0466$. The 95% confidence interval ranged from $-0,1590$ to $0,0051$. Therefore, the indirect effect was not statically significant, because 0 was out of the interval.

Discussion

The results of the present research support hypothesis 1. As hypothesis 1 predicted, the feedback, provided by the leader, positively affects team adaptability. Therefore, our result comes in line with the research of Dickinson & McIntyre (1997). They argue that to adjust performance each one of the elements have a communication need of corrective behaviors and instructions that come from the leader feedback. When providing feedback, the leader is alerting the team members that an adaptive action is needed. Also, this first hypothesis was proved in all over the three segments of our study. So, one way or another all teams receive feedback and consequently adapt.

Experimenting involves seeking for feedback, therefore if the team members ask for help, analyze their mistakes, innovate and have massive communication with the goal of a common understanding, they might improve their work. Another study says that the leader that provide performance feedback will enroll in performance manager behaviors that in consequence will make easier the expanded team learning behavior, (Gibson and Vermeulen 2003).

Furthermore, team that understand errors and transform them to knowledge will have a better outcome than teams that cannot understand and learn from errors (A. Edmondson, 1999). London (2006) alleges that “without feedback, a group can change but cannot learn”, (page 305).

West, (2004) says that to achieve team learning each element needs to get together as one and understand the team processes and behaviors. Burke et al., (2006) argue that “on the surface, it might appear that team learning and team adaptation have considerable overlap”. However, if we analyze it correctly we understand that although they are complementary these two concepts are different. Looking to Edmonson’s and West’s work, team learning fundamentally a defined as a cognitive state that will input the know-how that might in a return empowers the competencies of the team. If the team learn well the competences they will transform this input into adapting. Therefore, first we learn and then adapt as consequence, although we can learn from adaptation.

In the second hypothesis, the results of the leader’s feedback influencing positively psychological safety were not straight ahead in all the three samples. The sports and company’s segments go along side with our predictions. So, the leader behavior is crucial to create an atmosphere of psychological safety in these contexts. Edmondson, (2003) says that the “benefit of this effort for the leaders is that they are more likely to learn what people are really thinking

and feeling”. We believe that these results are leveraged because feedback is communication, which in turn, with a good team atmosphere will help to create a rule of active participation such as exchanging ideas or information. She also says that team elements who understand and respect their leader opinion consequently will feel free to talk with the team about their mistakes.

Even negative feedback can lead to a team psychological safety atmosphere when seen has a friendly advice and not as treat, providing mutual respect and confidence. Therefore, they feel comfortable in their own skin and this collective behavior is like a snowball, that will make team members feel that their opinion is respected and seeking for feedback.

On the contrary, the second hypothesis was rejected in the military sample. How their leader’s feedback influences the military to work in the ultimate effort that can be the sacrifice of their own life, if they do not have psychological safety? We believe that the leader’s feedback may influence others emergent states such as collective efficacy, team cohesion and potency. Also in the military feedback does not make people feel safer to take interpersonal risks with their colleagues. Maybe, because in this type of organizations, the feedback always ends up "from top to bottom" and does not generate feedback among the peers. Thus, in this context the leader’s feedback continues to be important because it will empower the member attitudes, values, cognitions and motivations. So, when hypothesis two says that the leader’s feedback leads to psychical safety it means that the sample in which more than 2/3 of the people are not military ends up attenuating the remaining 1/3 where this hypothesis is not supported.

When analyzing the results of the third hypothesis – The feedback provided by the leader positively affects team adaptability especially when mediated by psychological safety – not all the segments had the same output. Starting with the segment of sports, our results show that Psychological Safety has an impact as a mediator of the relationship leader’s feedback – team adaptation. We argue that this result is amplified by the learning environment. The actions where the individuals understand and analyzed the information in order to adapt and upgrade are defined as the learning behavior.

A. C. Edmondson & T, (2003) defined five learning-oriented behaviors that might be empower by team Psychological safety. The first one is help-seeking. The learning environment can be risky in terms of social integration because anyone can easily appear incompetent when asking for help. Therefore, team psychological safety help increase help-seeking because they do not care much about the other’s reactions

In the same concept the feedback-seeking is essential to have successful task. That might result in “learning anxiety” guided by the scare and the doubt of decreasing “effectiveness and self-esteem” (Schein, 1995).

Another behavior is speaking up about errors and concerns. As an example, when you an wrong answer you are in a situation of potential embarrassment. Psychological safety will prepare you to understand and believe the gains of speaking up against the counterbalance costs.

One of the most important behaviors that is empowered by psychological safety is innovation. Giving new ideas or experiment new behaviors can be a risk for social embarrassment. So, psychological safety encourages participation because it decreases the fear of being stupid and consequently increases the freedom for innovation, (West 1990). Finally, contacting with the external teams can help them to coordinate goals, timetables and resources, these actions are defined as boundary spanning behavior. If the individuals are able to take interpersonal risk in their team it will be easier to them to do the same behavior in external ones, therefore foster boundary spanning behavior is improved by psychological safety (Edmondson, 1999c). Also, boundary spanning promotes effective team performance.

Sometimes we learn with attempt-error and making mistakes that have the potential for embarrassment and the positive feedback of the leader has huge impact on the self-confidence. As Edmondson (1999) argued, a good team psychological safety alleviates an excessive concern about other’s reactions. Therefore, effective teams are in constant adaptation and they need to feel free to innovate and to attempt new behaviors without the anxiety of appear dumb. In these cases, the feedback of the leader must be a positive reinforcement to the new adaptation.

When looking for the segment of the companies our results show that psychological safety has an impact as a mediator of the process leader’s feedback – team adaptation. This impact is smaller than in the sports segment. This minor impact may come from the fact that companies have a smaller margin to make mistakes. For example, an innovation that did not go as planned can cost millions to a company. Therefore, is more difficult to feel able to present and handle adaptation without the risk of adverse consequences to self-image, dignity or prestige (Kahn, 1990). On the other side, the leader that provides feedback provokes an interaction between members stimulating coordination, communication and motivation, which in turn will enable a greater team creativity. The leader’s feedback also promotes team situation awareness which in turn support team adaptive performance through a shared understanding regarding the present stage. Burke et al., (2006) argues that what permit individuals to adapt pro-actively is the team member’s same perspectives the of equipment, tasks, roles and responsibilities. Beyond that she says that in the absence of shared mental models adaptive team

performance is impossible. In sum, in the workplace the leader's feedback is essential to develop the team and to create a "safe" environment in order to adapt and become more effective. Therefore, psychological safety empowers the relationship between the leader's feedback and the team adaptation.

Lastly, in the military segment, the Psychological Safety does not have an impact as a mediator of the process of the leader's feedback – team adaptation. Although, we need to consider that hypothesis 1 – the feedback provided by the leader positively affects adaptability – is valid in the three segments. So, the leader feedback leads to adaption, however only insight the limits of leader. Also, is crucial that the leader who gives feedback can communicate in a tone that engages and influences the team members vigorously.

As said above, in hypothesis 2, the results of military sample were not supported. This means that there is no psychological safety in the military context. So, because they do not have psychological safety, when brainstorming they are not able to express their fully opinions. Although the team adaptation happens. So, should we look for another mediator? Maybe this process takes place with a different mediator such as the capacity of planning or the respect for the leader. Also, we question ourselves: Which leads the military to be team work engaged? And dedicated? When Lim and Ployhart (2004) claimed that military leaders are perceived as uninspiring and unstimulating by their followers.

Further, is interesting to look to a report by the Defense Science Board of the United States (2011) where they defined adaptability as ' . . . the ability and willingness to anticipate the need for change, to prepare for that change, and to implement changes in a timely and effective manner in response to the surrounding environment.' (p. 3). Therefore, with a complex global environment that changes every day the ability to military organizations to adapt is essential to successful performance.

Practical Implications

The conclusions from this dissertation have a few practical implications specially for three samples sports, companies and military. The feedback of the leader was studied and proved to be very important to learn and to achieve team adaptation in all the samples. Each leader should know when and how to give feedback in each type of environment or culture in order to have an effective team.

Another insight of my research is that the leader should be aware that the perceptions of psychological safety should converge in a team. In other words, there is no benefits of individual psychological safety in learning and consequently adapt. The whole team must develop this shared beliefs and perceptions to develop pertinent shared experiences. Therefore, team psychological safety affects positively the team adaptation in the contexts of sports and companies that consequently team performance. So, to potentiate this relationship of psychological safety – team adaptability, besides the leader feedback, the teams must speak up about errors and concerns to decrease the learning anxiety. Also, it should be encouraged the freedom for new ideas and behaviors. In short, the team should learn with attempt-error and the leader should let the team find its way.

In my point view, team psychological safety and team efficacy complement each other. When the first one refers to interpersonal relationships related to the safe environment that leads to satisfaction and longevity of team. The team efficacy is the team's potential to perform, such as the number of scores or in a company overcame the objectives draw.

In relation to the military organizations, according to the result of my study the leader should be conscious about the non-existence of team psychological safety. Whether they choose to have team Psychological Safety or not, the leader must be educated to understand the benefits of a safe environment. This also applies to every team as sports or companies. To create a safe environment all teams should have ice breaker and team building exercises and should practice on the field such as war simulation trainings. Also, the leader should encourage the team members to seek feedback, to ask for help. Still the leader should empower the core values of the team such as trust and respect. Further the leader must reflect the all team and be accessible and approachable.

Limitations and Further Developments

There are some of limitations in this dissertation that must be present when analyzing and stated this research. First, due to restriction chronology and human resources we were not able to collect large number of teams. Therefore, because we had a small sample (n=147 individual, with n=13 military teams, n=10 company's teams, n=9 sports teams) we conducted this analysis at the individual level and it was not possible to split in teams of military, company's and sports' teams. In addition, the sample had huge gap in the age of the respondents and the military teams were totally composed by males.

The second limitation is linked to the fact that the data was collected in a single point in time rather than being collected as a longitudinal study. Also, Edmondson, (1999) argues that time matters in build psychological safety as a result of shared beliefs are settled with time. Thus, to overcome this limitation further research should be applied in several points in time with the same methodology. Another limitation was that the results were based in surveys where the answers were based on self-evaluation.

So, based on these limitations some further research could be made with these real teams, especially in the military context. Further research could be also explored with other mediators of leader's feedback and team adaptability such as capacity of planning or the respect for the leader. Also, it could be interesting to study the relationship between the leader's feedback and work engagement or shared mental models. To develop even further this research could take into account the leader psychological safety compared with the team members.

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Appendix

Appendix 1. Items and scales for the leader's feedback, team adaptation and psychological safety variables, included in the survey.

Variable	Item	Scale	Source
Leader's Feedback	Review relevant performance results with the team.	1- Strongly disagree; 2- Disagree; 3- Somewhat disagree; 4- Neither agree nor disagree; 5- Somewhat agree; 6- Agree; 7- Strongly agree;	Hoogh & Deu (2008)
	It premiums the performance of team members according to performance standards.		
	Communicates operational and performance results.		
	Give positive feedback when the team performs well.		
	Gives corrective feedback.		
Team Adaptation	Make creative decisions to solve difficult problems, which can have more than one answer.		Marques-Quinteiro, P., Ramos-Villagrasa, P. J., Passos, A. M., & Curral, L. (2015).
	Find innovative ways to deal with unexpected events.		
	Make reasonable decisions, shifting focus, when dealing with unpredictable decisions.		
	Elaboration of alternative plans in a very short time to deal with the new demands of the task.		
	Periodically update technical and interpersonal skills to better perform the tasks in which they are involved.		
	Research and development of new skills to deal with difficult situations.		
	Adjust personal behavior to accommodate the characteristics of other team members.		
	Improve interpersonal relationships by meeting the needs and aspirations of each team member.		
	Keeping calm and behaving positively under highly stressful events.		
	Maintain focus when dealing with various situations and responsibilities.		
Psychological Safety	My team members do not tolerate other member's mistakes. (R)		Edmonson (1999)
	My team members can debate about difficult problems and subjects.		
	My team members sometimes reject other members because they are different. (R)		
	In my team, it is safe to take risks and take chances on new ideas.		
	In my team, it is difficult to ask for help to another member. (R)		
	Nobody in my team would deliberately jeopardize another member.		
	When working with members of my team, my competences and talents are valued and used.		

